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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/096,113	06/11/1998	GERNOT HOYLER	P98.0318	1423

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PATENT DEPARTMENT
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EXAMINER

JONES, HUGH M

ART UNIT	PAPER NUMBER
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2128

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10/07/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/096,113	Applicant(s) HOYLER, GERNOT	
	Examiner Hugh Jones	Art Unit 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/26/2007, 12/27/2007, 2/5/2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-12,14 and 16-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-12,14 and 16-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1, 4-12, 14, 16-19 of U. S. Application 09/096,113, filed 6/11/1998, are pending.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. **Claims 1, 4-12, 14, 16-19 are rejected under 35 U.S.C. 101 as being directed to nonstatutory subject matter since the claims as a whole do not provide for a practical application, as evidenced by lack of physical transformation or a useful, tangible, and concrete result.**

4. Applicants are seeking patent protection for abstract ideas including basic electromagnetic field calculations (with Maxwell's equations).

5. The 101 rejections are applied in view of the interim guidelines, MPEP sections 2106-2107 (8/2005), and *Ex Parte Bilski* ("informative Opinion" of the Board).

6. Claims directed to nothing more than abstract ideas (such as mathematical algorithms, software per se), natural phenomena, and laws of nature are not eligible for patent protection. While abstract ideas, natural phenomena, and laws of nature are not eligible for patenting, methods and products employing abstract ideas, natural phenomena, and laws of nature to perform a real-world function may well be (MPEP, 2106).

7. Consider claim 1, for example:

1. (Currently amended) A computer-aided simulation method for determining an electromagnetic field of a body to be produced which has a plurality of subregions and contains a plurality of charges and currents, comprising the steps of:

for a body to be produced that contains a plurality of charges and currents,
defining a plurality of subregions of the body,

in a computer, iteratively performing in each case of the plurality of subregions, a global multipole expansion, which represents an effect of charges and currents for distant points in a respective subregion of the plurality of subregions in the multipole expansion, and a local multipole expansion, which represents an effect of charges and currents at points inside the respective subregions of the plurality of subregions in a multipole expansion, until an error measure is of a predetermined size, in a last iteration, by defining a vector I representing a current distribution in the body and initially setting $I = 0$ and changing I in steps in successive iterations, each iteration comprising: and

a) calculating the global multipole expansion with global multipole coefficients according to

$$c^g = GI$$

c^g being a vector composed of the global multipole coefficients of the plurality of subregions,

determining the electromagnetic field of the body by superposition using the global multipole expansion and the local multipole expansion of the plurality of subregions from the last iteration;

using the determined electromagnetic field of the body to assess electromagnetic compatibility of the body with an environment of the body; and

if said electromagnetic compatibility is satisfactory, producing the body according to all values in said last iteration.

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Calculating an electromagnetic field for a hypothetical body to be produced is not “useful” as envisioned by the courts. The claim merely recites calculating theoretical electromagnetic equations for a hypothetical object.

8. To satisfy 35 U.S.C. 101, an invention must be “useful.” See MPEP 2107.01:

Deficiencies under the “useful invention” requirement of 35 U.S.C. 101 will arise in one of two forms. The first is where it is not apparent why the invention is “useful.” This can occur when an applicant fails to identify any specific and substantial utility for the invention or fails to disclose enough information about the invention to make its usefulness immediately apparent to those familiar with the technological field of the invention. *Brenner v. Manson*, 383 U.S. 519, 148 USPQ 689 (1966); > *In re Fisher*, 421 F.3d 1365, 76 USPQ2d 1225 (Fed. Cir. 2005);< *In re Ziegler*, 992 F.2d 1197, 26 USPQ2d 1600 (Fed. Cir. 1993).

...

A “specific utility” is specific to the subject matter claimed and can “provide a well-defined and particular benefit to the public.” *In re Fisher*, 421 F.3d 1365, 1371, 76 USPQ2d 1225, 1230 (Fed. Cir. 2005). This contrasts with a general utility that would be applicable to the broad class of the invention. Office personnel should distinguish between situations where an applicant has disclosed a specific use for or application of the invention and situations where the applicant merely indicates that the invention may prove useful without identifying with specificity why it is considered useful.

9. The claimed invention is not eligible for patent protection because the claimed invention has not been limited to a substantial practical application of a 35 U.S.C. 101 judicial exception. A mere abstraction provides for no benefit in a real world situation.

10. Reliance upon *Ex Parte Bilski* (Appeal No. 2002-2257 – “informative Opinion” of the Board) is incorporated from the action of 9/25/2007. When conducting the section 101 analysis, the claims must be examined “as a whole.” *Id.* at 188.

11. Calculating an electromagnetic field between a hypothetical body to be produced and a hypothetical environment is not “useful” as envisioned by the courts. See the specification (page 1):

The invention relates to a computer-aided simulation method for determining the electromagnetic field of a body which comprises a plurality of subregions and contains a plurality of charges and currents.

12. The claims only provide for an abstract idea; the result is not specific and substantial.

13. See MPEP 2106 IV C 2 (a) ("USEFUL RESULT")

For an invention to be "useful" it must satisfy the utility requirement of section 101. The USPTO's official interpretation of the utility requirement provides that the utility of an invention has to be (i) specific, (ii) substantial and (iii) credible. MPEP § 2107 and Fisher, 421 F.3d at 1372, 76 USPQ2d at 1230 (citing the Utility Guidelines with approval for interpretation of "specific" and "substantial"). In addition, when the examiner has reason to believe that the claim is not for a practical application that produces a useful result, the claim should be rejected, thus requiring the applicant to distinguish the claim from the three 35 U.S.C. 101 judicial exceptions to patentable subject matter by specifically reciting in the claim the practical application. In such cases, statements in the specification describing a practical application may not be sufficient to satisfy the requirements for section 101 with respect to the claimed invention. Likewise, a claim that can be read so broadly as to include statutory and

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nonstatutory subject matter must be amended to limit the claim to a practical application. In other words, if the specification discloses a practical application of a section 101 judicial exception, but the claim is broader than the disclosure such that it does not require a practical application, then the claim must be rejected.

14. As for 'producing the body' when the compatibility is determined to be satisfactory, this amounts to insignificant post-solution activity. See *Diehr*, 450 U.S. at 191-92 ("insignificant post-solution activity will not transform an unpatentable principle into a patentable process. To hold otherwise would allow a competent draftsman to evade the recognized limitations on the type of subject matter eligible for patent protection.")

15. See *Flook*, in which the Court concluded that the recitation of insignificant post-solution activity in a claim involving the solving of a mathematical algorithm could not impart patentability to the claim.

16. In this case, the claims are directed to abstract ideas because the claims do not provide for a concrete, tangible and useful (where the use is specific and substantial) result.

17. It appears that Applicants are attempting to cover every possible practical application (namely, preemption of Maxwell's equations of electromagnetism). See MPEP 2106:

Determine Whether the Claimed Invention Preempts a 35 U.S.C. 101 Judicial Exception (Abstract Idea, Law of Nature, or Natural Phenomenon)

Even when a claim applies a mathematical formula, for example, as part of a seemingly patentable process, USPTO personnel must ensure that it does not in reality "seek[]patent

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protection for that formula in the abstract.” Diehr, 450 U.S. at 191, 209 USPQ at 10. “Phenomena of nature, though just discovered, mental processes, abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.” Benson, 409 U.S. at 67, 175 USPQ at 675. One may not patent a process that comprises every “substantial practical application” of an abstract idea, because such a patent “in practical effect would be a patent on the [abstract idea] itself.” Benson, 409 U.S. at 71-72, 175 USPQ at 676; cf. Diehr, 450 U.S. at 187, 209 USPQ at 8 (stressing that the patent applicants in that case did “not seek to pre-empt the use of [an] equation,” but instead sought only to “foreclose from others the use of that equation in conjunction with all of the other steps in their claimed process”). “To hold otherwise would allow a competent draftsman to evade the recognized limitations on the type of subject matter eligible for patent protection.” Diehr, 450 U.S. at 192, 209 USPQ at 10. Thus, a claim that recites a computer that solely calculates a mathematical formula (see Benson) or a computer disk that solely stores a mathematical formula is not directed to the type of subject matter eligible for patent protection. If USPTO personnel determine that the claimed invention preempts a 35 U.S.C. 101 judicial exception, they must identify the abstraction, law of nature, or natural phenomenon and explain why the claim covers every substantial practical application thereof.

Allowable Subject Matter

18. Claims 1, 4-12, 14, 16-19 are allowed over the prior art of record.
19. The following is a statement of reasons for the indication of allowable subject matter: the specific algorithms, as incorporated into the independent claims, do not appear to be disclosed in the prior art of record.

Response to Arguments

20. Applicant’s arguments, filed 12/26/2007, 12/27/2007, 2/5/2008, have been carefully considered, but are not persuasive. Applicants are thanked for their responses.
21. The objection to the oath is withdrawn in view of Applicant’s arguments.
22. The objection to the drawings and the 112 and art rejections are withdrawn in view of the amendments.
23. Applicants argue (pg. 12, 12/26/2007):

In response, each of independent claims 1, 14 and 19, in addition to bringing the allowable subject matter of claims 2-3, 15 and 20 respectively therein, have been amended to refer to the body as a body to be produced, and the procedures respectively described in those claims have been stated to produce a last iteration, with the electromagnetic compatibility of the body with respect to its environment then being assessed and, if the electromagnetic compatibility is satisfactory, the body is produced according to the values in the last iteration. This is clearly a useful, tangible and concrete result, and therefore all claims are submitted to be in full compliance with all provisions of 35 U.S.C. §101.

And

Support for the aforementioned amendments to the independent claims is present in the specification as originally filed in the paragraphs beginning at lines 7 and 14 respectively, at page 5 of the present specification. From those passages, as well as numerous other passages in the present specification, it is clear that the goal of the invention is to, before producing a product, simulate the electromagnetic field of the body in question for the purpose of assessing its electromagnetic compatibility with the environment in which it will be used, so as to avoid producing a body that is electromagnetically incompatible with the environment, thereby avoiding time and money for producing a body that cannot be used.

Please see the updated rejections in response to the amendment.

Conclusion

24. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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25. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

26. Any inquiry concerning this communication or earlier communications from the examiner should be:

directed to: Hugh Jones telephone number (571) 272-3781,

Monday-Thursday 0830 to 0700 ET,

or

the examiner's supervisor, Kamini Shah, telephone number (571) 272-2279.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, telephone number (703) 305-3900.

mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 308-9051 (for formal communications intended for entry)

or (703) 308-1396 (for informal or draft communications, please label *PROPOSED* or *DRAFT*).

/Hugh Jones/

Primary Patent Examiner

September 30, 2008